

AMENDMENTS TO THE CLAIMS:

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1-16 (Cancelled).

17. (New) A data recording and reproduction apparatus for recording and reproducing an audio data stream as digital audio data, said apparatus comprising:

a stream storage unit for storing the audio data stream;

a stream writing unit for writing the audio data stream into said stream storage unit; and

a stream reading unit for reading the audio data stream from said stream storage unit;

said stream writing unit comprising

stream attribute decision means for deciding whether or not the audio data stream has been subjected to a data conversion process performed on digital audio data, and

stream writing means for attaching a conversion ID flag having a value indicating the result of the decision of said stream attribute decision means to the audio data stream, and for writing a flag-attached audio data stream into said stream storage unit; and said stream reading unit comprising

stream reading means for reading the flag-attached audio data stream from said stream storage unit,

data converting means for subjecting a flag-attached audio data stream from among read audio streams to an inverse conversion process, which is inverse to the data conversion process, when the conversion ID flag of the flag-attached audio data stream indicates that the flag-attached audio data stream has been subjected to the data conversion process and has resultantly become unsuitable for watermark insertion because of being subjected to the data conversion process so as to enable the flag-attached audio data stream from among the read audio streams to be suitable for the watermark assertion, and

watermarking means for inserting a watermark in the flag-attached audio data stream read by said stream reading means which has not been subjected to the data

conversion process, and for inserting the watermark in the flag-attached audio data stream which has been subjected to the inverse conversion process by said data converting means.

18. (New) The data recording and reproduction apparatus according to claim 17, wherein said stream reading unit further comprises DA conversion means for converting the flag-attached audio data stream in which the watermark is inserted by said watermarking means to analog audio data, and for outputting the analog audio data.

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19. (New) The data recording and reproduction apparatus according to claim 17, wherein:  
the data conversion process performed on the digital audio data is a data compression process for compressing the digital audio data by coding;  
the inverse conversion process is a decompression process for decompressing compressed digital audio data by decoding; and  
said stream writing means attaches a composition ID flag to the audio data stream as the conversion ID flag having a value indicating the result of the decision of said stream attribute decision means, the composition ID flag indicating whether or not the audio data stream has been subjected to the data compression process.

20. (New) The data recording and reproduction apparatus according to claim 19, wherein said stream reading unit further comprises:  
stream flag decision means for deciding whether or not the flag-attached audio data stream read from said stream storage unit has been subjected to the data compression process according to the compression ID flag of the read flag-attached audio data stream; and  
decoding means for decompressing, by decoding, the flag-attached audio data stream which is decided as being subjected to the data compression process by said stream flag decision means, and for outputting a decompressed audio data stream, and

wherein the flag-attached audio data stream which is decided as being not subjected to the data compression process by said stream flag decision means and the decompressed audio data stream output from said decoding means are supplied to said watermarking means.

21. (New) The data recording and reproduction apparatus according to claim 19, wherein said stream reading unit further comprises DA conversion means for converting the flag-attached audio data stream in which the watermark is inserted by said watermarking means to analog audio data, and for outputting the analog audio data.

22. (New) The data recording and reproduction apparatus according to claim 17, wherein:  
the data conversion process performed on the digital audio data includes at least one of a data compression process for compressing digital audio data by coding and a scramble process for scrambling digital audio data or compressed digital audio data;

the inverse conversion process includes at least one of a decompression process for decompressing compressed digital audio data by decoding and a descramble process for descrambling scrambled digital audio data or scrambled compressed digital audio data; and

said stream writing means attaches a compression ID flag and a scramble ID flag to the audio data stream as the conversion ID flag having a value corresponding to the result of the decision of said stream attribute decision means, the compression ID flag indicating whether or not the audio data stream has been subjected to the data compression process, and the scramble ID flag indicating whether or not the audio data stream or a compressed audio data stream has been subjected to the scramble process.

23. (New) The data recording and reproduction apparatus according to claim 22, wherein said stream writing unit further comprises scramble key writing means for writing a scramble key adapted to the audio data stream which has been subjected to the scramble process into said stream storage unit, and

wherein said stream reading unit further comprises:

scramble key reading means for reading the scramble key adapted to the audio data stream which has been subjected to the scramble process from said stream storage unit;

first stream flag decision means for deciding whether or not the flag-attached audio data stream read from said stream storage unit has been subjected to the scramble process according to the scramble ID flag of the read flag-attached audio data stream;

descrambling means for descrambling, by using the scramble key, the flag-attached audio data stream which is decided as being scrambled by said first stream flag decision means, and for outputting a descrambled audio data stream;

second stream flag decision means for deciding whether or not the flag-attached audio data stream which is decided as being not scrambled by said first stream flag decision means and the descrambled audio data stream output from said descrambling means have been subjected to the data compression process according to their respective compression ID flags; and

decoding means for decompressing, by decoding, the flag-attached audio data stream which is decided as being compressed by said second stream flag decision means, and for outputting a decompressed audio data stream, and

wherein the flag-attached audio data stream which is decided as being not scrambled by said first stream flag decision means and the descrambled audio data stream output from said descrambling means are supplied to said second stream flag decision means, while the flag-attached audio data stream which is decided as being not compressed by said second stream flag decision means and the decompressed audio data stream output from said decoding means are supplied to said watermarking means.

24. (New) The data recording and reproduction apparatus according to claim 22, wherein said stream reading unit further comprises DA conversion means for converting the flag-attached audio data stream in which the watermark is inserted by said watermarking means to analog audio data, and for outputting the analog audio data.

25. (New) The data recording and reproduction apparatus according to claim 17, wherein said stream reading unit is constituted by a single apparatus for reproducing a data stream which is separate from said writing unit and said storage unit, and said single apparatus comprises apparatus type information holding means for holding apparatus type information which indicates a type of said single apparatus, and

wherein said stream storage unit comprises:

stream storage means for storing the flag-attached audio data stream output from said stream writing means;

authorized apparatus type information storage means for storing authorized apparatus type information indicating stream reproduction apparatuses which are permitted to read the flag-attached audio data stream from said stream storage means;

apparatus type information obtaining means for obtaining the apparatus type information held by said apparatus type information holding means; and

stream read permission decision means for searching said authorized apparatus type information storage means for the apparatus type information obtained by said apparatus type information obtaining means, and for permitting said stream reading means to read the flag-attached audio data stream from said stream storage means only when an authorized apparatus type information corresponding to the obtained apparatus type information is present.

26. (New) The data recording and reproduction apparatus according to claim 20, wherein said stream reading unit is constituted by a single apparatus for reproducing a data stream which is separate from said writing unit and said storage unit, and said single apparatus comprises apparatus type information holding means for holding apparatus type information indicating a type of said single apparatus, and wherein

said stream storage unit comprises:

stream storage means for storing the flag-attached audio data stream output from said stream writing means;

authorized apparatus type information storage means for storing authorized apparatus type information indicating stream reproduction apparatuses which are permitted to read the flag-attached audio data stream from said stream storage means;

apparatus type information obtaining means for obtaining the apparatus type information held by said apparatus type information holding means; and

stream read permission decision means for searching said authorized apparatus type information storage means for the apparatus type information obtained by said apparatus type information obtaining means, and for permitting said stream reading means to read the flag-attached audio data stream from said stream storage means only when an authorized apparatus type information corresponding to the obtained apparatus type information is present.

27. (New) The data recording and reproduction apparatus according to claim 23, wherein said stream reading unit is constituted by a single apparatus for reproducing a data stream which is separate from said writing unit and said storage unit, and said single apparatus comprises apparatus type information holding means for holding apparatus type information indicating a type of said single apparatus, and wherein

said stream storage unit comprises:

stream storage means for storing the flag-attached audio data stream output from said stream writing means;

scramble key storage means for storing the scramble key output from said scramble key writing means;

authorized apparatus type information storage means for storing authorized apparatus type information indicating stream reproduction apparatuses which are permitted to read the flag-attached audio data stream from said stream storage means;

apparatus type information obtaining means for obtaining the apparatus type information held by said apparatus type information holding means; and

stream read permission decision means for searching said authorized apparatus type information storage means for the apparatus type information obtained by said apparatus type information obtaining means, and for permitting said stream reading means to read the flag-attached audio data stream from said stream storage means only when an authorized apparatus type information corresponding to the obtained apparatus type information is present.

28. (New) The data recording and reproduction apparatus according to claim 23, wherein said stream reading unit is constituted by a single apparatus for reproducing a data stream which is separate from said writing unit and said storage unit, and said single apparatus comprises apparatus type information holding means for holding apparatus type information indicating a type of said single apparatus, and wherein

said stream storage unit comprises:

stream storage means for storing the flag-attached audio data stream output from said stream writing means;

scramble key storage means for storing the scramble key output from said scramble key writing means;

authorized apparatus type information storage means for holding authorized apparatus type information indicating stream reproduction apparatuses which are authorized to read the flag-attached audio data stream from said stream storage means;


apparatus type information obtaining means for obtaining the apparatus type information held by said apparatus type information holding means; and

scramble key read permission decision means for searching the authorized apparatus type information storage means for the apparatus type information obtained by said apparatus type information obtaining means, and for permitting said scramble key reading means to read the scramble key from said scramble key storage means only when an authorized apparatus type information corresponding to the obtained apparatus type information is present.

29. (New) The data recording and reproduction apparatus according to claim 17, wherein said stream storage unit is implemented by an IC card on which a RAM for storing an audio data stream and a CPU for controlling access to the audio data stream stored in said RAM are mounted thereon.

30. (New) The data recording and reproduction apparatus according to claim 25, wherein: said stream storage unit is implemented by an IC card on which a RAM for storing an audio data stream and a CPU for controlling access to the audio data stream stored in said RAM are mounted thereon;

said stream storage means and said authorized apparatus type information storage means are implemented by said RAM; and

 said apparatus type information obtaining means and said stream read permission decision means are implemented by said CPU.

31. (New) The data recording and reproduction apparatus according to claim 27, wherein: said stream storage unit is implemented by an IC card on which a RAM for storing an audio data stream and a CPU for controlling access to the audio data stream stored in said RAM are mounted thereon;

said stream storage means, said scramble key storage means, and said authorized apparatus type information storage means are implemented by said RAM; and

said apparatus type information obtaining means and said stream read permission decision means are implemented by said CPU.

32. (New) The data recording and reproduction apparatus according to claim 28, wherein: said stream storage unit is implemented by an IC card on which a RAM for storing an audio data stream and a CPU for controlling access to the audio data stream stored in said RAM are mounted thereon;



said stream storage means, said scramble key storage means, and said authorized apparatus type information storage means are implemented by said RAM; and

said apparatus type information obtaining means and said scramble key read permission decision means are implemented by said CPU.

33. (New) A data recording and reproduction apparatus operable to record and reproduce an audio data stream as digital audio data, said apparatus comprising:

a stream storage unit for storing the audio data stream;

a stream writing unit for writing the audio data stream into said stream storage unit;

and

a stream reading unit for reading the audio data stream from said stream storage unit;

said stream writing unit comprising

a stream attribute decision unit operable to decide whether or not the audio data stream has been subjected to a data conversion process performed on digital audio data, and

a writing and attaching unit operable to attach a conversion ID flag having a value indicating the result of the decision to the audio data stream, and to write the flag-attached audio data stream into said stream storage unit; and

said stream reading unit comprising

a reading unit operable to read the flag-attached audio data stream from said stream storage unit,

a data converting unit operable to subject a flag-attached audio data stream from among read audio streams to an inverse conversion process, which is inverse to the data conversion process, when the conversion ID flag of the flag-attached audio data stream indicates that the flag-attached audio data stream has been subjected to the data conversion process and has resultantly become unsuitable for watermark insertion because of being subjected to the data conversion process so as to enable the flag-attached

audio data stream from among the read audio streams to be suitable for the watermark assertion, and

a watermarking unit operable to insert a watermark in the flag-attached audio data stream read by said stream reading unit which has not been subjected to the data conversion process, and to insert the watermark in the flag-attached audio data stream which has been subjected to the inverse conversion process by the data converting unit.

34. (New) The data recording and reproduction apparatus according to claim 33, wherein said stream reading unit further comprises a DA conversion unit operable to convert the flag-attached audio data stream in which the watermark is inserted by said watermarking unit to analog audio data, and to output the analog audio data.

35. (New) The data recording and reproduction apparatus according to claim 33, wherein: the data conversion process performed on the digital audio data is a data compression process for compressing the digital audio data by coding;

the inverse conversion process is a decompression process for decompressing compressed digital audio data by decoding; and

said writing and attaching unit is operable to attach a composition ID flag to the audio data stream as the conversion ID flag having a value indicating the result of the decision of said stream attribute decision unit, the composition ID flag indicating whether or not the audio data stream has been subjected to the data compression process.

36. (New) The data recording and reproduction apparatus according to claim 35, wherein said stream reading unit further comprises:

a stream flag decision unit operable to decide whether or not the flag-attached audio data stream read from said stream storage unit has been subjected to the data compression process according to the compression ID flag of the read flag-attached audio data stream; and

a decoding unit operable to decompress, by decoding, the flag-attached audio data stream which is decided as being subjected to the data compression process by said stream flag decision unit, and to output a decompressed audio data stream;

wherein the flag-attached audio data stream which is decided as being not subjected to the data compression process by said stream flag decision unit, and the decompressed audio data stream output from said decoding unit are supplied to said watermarking unit.

37. (New) The data recording and reproduction apparatus according to claim 35, wherein said stream reading unit further comprises a DA conversion unit operable to convert the audio data stream in which the watermark is inserted by said watermarking unit to analog audio data, and to output the analog audio data.

a' 38. (New) The data recording and reproduction apparatus according to claim 33, wherein: the data conversion process performed on the digital audio data includes at least one of a data compression process for compressing digital audio data by coding and a scramble process for scrambling digital audio data or compressed digital audio data;

the inverse conversion process includes at least one of a decompression process for decompressing compressed digital audio data by decoding and a descramble process for descrambling scrambled digital audio data or scrambled compressed digital audio data; and

said writing and attaching unit is operable to attach a compression ID flag and a scramble ID flag to the audio data stream as the conversion ID flag having a value corresponding to the result of the decision of said stream attribute decision unit, the compression ID flag indicating whether or not the audio data stream has been subjected to the data compression process, and the scramble ID flag indicating whether or not the audio data stream or a compressed audio data stream has been subjected to the scramble process.

39. (New) The data recording and reproduction apparatus according to claim 38, wherein said stream writing unit further comprises a scramble key writing unit operable to write a scramble

key adapted to the audio data stream which has been subjected to the scramble process into said stream storage unit, and

wherein said stream reading unit further comprises:

a scramble key reading unit operable to read the scramble key adapted to the audio data stream which has been subjected to the scramble process from said stream storage unit;

a first stream flag decision unit operable to decide whether or not the flag-attached audio data stream read from said stream storage unit has been subjected to the scramble process according to the scramble ID flag of the read flag-attached audio data stream;

a descrambling unit operable to descramble, by using the scramble key, the flag-attached audio data stream which is decided as being scrambled by said first stream flag decision means, and to output a descrambled audio data stream;

a second stream flag decision unit operable to decide whether or not the flag-attached audio data stream which is decided as being not scrambled by said first stream flag decision unit and the descrambled audio data stream output from said descrambling unit have been subjected to the data compression process according to their respective compression ID flags; and

a decoding unit operable to decompress, by decoding, the flag-attached audio data stream which is decided as being compressed by said second stream flag decision unit, and to output a decompressed audio data stream; and

wherein the flag-attached audio data stream which is decided as being not scrambled by said first stream flag decision unit and the descrambled audio data stream output from said descrambling unit are supplied to said second stream flag decision unit, while the flag-attached audio data stream which is decided as being not compressed by said second stream flag decision unit and the decompressed audio data stream output from said decoding unit are supplied to said watermarking unit.

40. (New) The data recording and reproduction apparatus according to claim 38, wherein said stream reading unit further comprises a DA conversion unit operable to convert the audio data stream in which the watermark is inserted by said watermarking unit to analog audio data, and to output the analog audio data.

41. (New) The data recording and reproduction apparatus according to claim 33, wherein said stream reading unit is constituted by a single apparatus for reproducing a data stream which is separate from said writing unit and said storage unit, and said single apparatus comprises an apparatus type information holding unit operable to hold apparatus type information which indicates a type of said single apparatus, and

wherein said stream storage unit comprises:

a storage device operable to store the flag-attached audio data stream output from said writing and attaching unit;

an authorized apparatus type information storage unit operable to store authorized apparatus type information indicating stream reproduction apparatuses which are permitted to read the flag-attached audio data stream from said storage device;

an apparatus type information obtaining unit operable to obtain the apparatus type information held by said apparatus type information holding unit; and

a stream read permission decision unit operable to search said authorized apparatus type information storage unit for the apparatus type information obtained by said apparatus type information obtaining unit, and to permit said reading unit to read the flag-attached audio data stream from said storage device only when an authorized apparatus type information corresponding to the obtained apparatus type information is present.

42. (New) The data recording and reproduction apparatus according to claim 36, wherein said stream reading unit is constituted by a single apparatus for reproducing a data stream which is separate from said writing unit and said storage unit, and said single apparatus comprises an

apparatus type information holding unit operable to hold apparatus type information indicating a type of said single apparatus, and

wherein said stream storage unit comprises:

a storage device operable to store the flag-attached audio data stream output from said writing and attaching unit;

an authorized apparatus type information storage unit operable to store authorized apparatus type information indicating stream reproduction apparatuses which are permitted to read the flag-attached audio data stream from said storage device;

an apparatus type information obtaining unit operable to obtain the apparatus type information held by said apparatus type information holding unit; and

a stream read permission decision unit operable to search said authorized apparatus type information storage unit for the apparatus type information obtained by said apparatus type information obtaining unit, and to permit said reading unit to read the flag-attached audio data stream from said storage device only when an authorized apparatus type information corresponding to the obtained apparatus type information is present.

43. (New) The data recording and reproduction apparatus according to claim 39, wherein said stream reading unit is constituted by a single apparatus for reproducing a data stream which is separate from said writing unit and said storage unit, and said single apparatus comprises an apparatus type information holding unit operable to hold apparatus type information indicating a type of said single apparatus, and

wherein said stream storage unit comprises:

a storage device operable to store the flag-attached audio data stream output from said writing and attaching unit;

a scramble key storage unit operable to store the scramble key output from said scramble key writing unit;

an authorized apparatus type information storage means operable to store authorized apparatus type information indicating stream reproduction apparatuses which are permitted to read the flag-attached audio data stream from said storage device;

an apparatus type information obtaining unit operable to obtain the apparatus type information held by said apparatus type information holding unit; and

a stream read permission decision unit operable to search said authorized apparatus type information storage means for the apparatus type information obtained by said apparatus type information obtaining unit, and to permit said reading unit to read the flag-attached audio data stream from said storage device only when an authorized apparatus type information corresponding to the obtained apparatus type information is present.

44. (New) The data recording and reproduction apparatus according to claim 39, wherein said stream reading unit is constituted by a single apparatus for reproducing a data stream, and said single apparatus comprises apparatus type information holding means for holding apparatus type information indicating a type of said single apparatus, and

wherein said stream storage unit comprises:

a storage device operable to store the flag-attached audio data stream output from said writing and attaching unit;

a scramble key storage unit operable to store the scramble key output from said scramble key writing unit;

an authorized apparatus type information storage unit operable to hold authorized apparatus type information indicating stream reproduction apparatuses which are authorized to read the flag-attached audio data stream from said storage device;

an apparatus type information obtaining unit operable to obtain the apparatus type information held by said apparatus type information holding unit; and

a scramble key read permission decision unit operable search the authorized apparatus type information storage unit for the apparatus type information obtained by

said apparatus type information obtaining unit, and to permit said scramble key reading unit to read the scramble key from said scramble key storage unit only when an authorized apparatus type information corresponding to the obtained apparatus type information is present.

45. (New) The data recording and reproduction apparatus according to claim 33, wherein said stream storage unit is implemented by an IC card on which a RAM for storing an audio data stream and a CPU for controlling access to the audio data stream stored in said RAM are mounted thereon.

a 46. (New) The data recording and reproduction apparatus according to claim 41, wherein: said stream storage unit is implemented by an IC card on which a RAM for storing an audio data stream and a CPU for controlling access to the audio data stream stored in said RAM are mounted thereon;

said storage device and said authorized apparatus type information storage unit are implemented by said RAM; and

said apparatus type information obtaining unit and said stream read permission decision unit are implemented by said CPU.

47. (New) The data recording and reproduction apparatus according to claim 43, wherein: said stream storage unit is implemented by an IC card on which a RAM for storing an audio data stream and a CPU for controlling access to the audio data stream stored in said RAM are mounted thereon;

said storage device, said scramble key storage unit, and said authorized apparatus type information storage unit are implemented by said RAM; and

said apparatus type information obtaining unit and said stream read permission decision unit are implemented by said CPU.



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48. (New) The data recording and reproduction apparatus according to claim 44, wherein:  
said stream storage unit is implemented by an IC card on which a RAM for storing an audio data stream and a CPU for controlling access to the audio data stream stored in said RAM are mounted thereon;  
said storage device, said scramble key storage unit, and said authorized apparatus type information storage unit are implemented by said RAM; and  
said apparatus type information obtaining unit and said scramble key read permission decision unit are implemented by said CPU.

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